



Louisville Metro Air Pollution Control District
701 West Ormsby Avenue, Suite 303
Louisville, Kentucky 40203-3137



October 28, 2019

Federally Enforceable District Origin Operating Permit Statement of Basis

Source: Ernst Concrete Kentucky, LLC Owner: Ernst Concrete Kentucky, LLC
Downtown Plant 3361 Successful Way
4121 Algonquin Parkway Dayton, OH 15414
Louisville, KY 40211

Application Documents: See Table 8 in section I
Public Comment Date: 09/25/2019
Permitting Engineer: Martin J Hazelett Permit Number: O-1293-19-F
Plant ID: 1293 SIC: 3273 NAICS: 327320

Introduction:

This permit will be issued pursuant to District Regulation 2.17- *Federally Enforceable District Origin Operating Permits*. Its purpose is to limit the plant wide potential emission rates from this source to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements.

This is a standard FEDOOP permit renewal. This action also updates the permit format and equipment lists.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀), and particulate matter less than 2.5 microns (PM_{2.5}). Jefferson County is classified as a nonattainment area for ozone (O₃). This facility is located in the portion of Jefferson County that is an attainment area for sulfur dioxide (SO₂).

Permit Application Type:

- | | | |
|---|--|--|
| <input type="checkbox"/> Initial issuance | <input type="checkbox"/> Permit Revision | <input checked="" type="checkbox"/> Permit renewal |
| | <input type="checkbox"/> Administrative | |
| | <input type="checkbox"/> Minor | |
| | <input type="checkbox"/> Significant | |

Compliance Summary:

- | | |
|--|---|
| <input type="checkbox"/> Compliance certification signed | <input type="checkbox"/> Compliance schedule included |
| <input type="checkbox"/> Source is out of compliance | <input checked="" type="checkbox"/> Source is operating in compliance |

I Source Information

1. Product Description:

Ernst Concrete Kentucky, LLC – Downtown is a dry batch plant, truck mix (dry) ready mix concrete production facility, consisting of a single truck mix (dry) ready mix concrete batch plant.

2. Process Description:

At the truck mix ready mix plant, the dry components of ready mix concrete (cement, fly ash, sand, and aggregate) are measured in weigh hoppers and put into a truck, water is added to the truck. All mixing is done in the truck and transported to offsite delivery locations.

3. Site Determination:

There are no other facilities that are contiguous or adjacent to this facility

4. Emission Unit Summary:

Emission Unit	Equipment Description
U1	Concrete Dry Mix Batch Plant
IA1	Storage Tanks

5. Fugitive Sources:

The fugitive sources identified by the source are uncontrolled portions of the truck mix concrete unit.

6. Permit Revisions:

Permit No.	Public Notice Date	Issue Date	Change Type	Description/Scope
27843-14-F	9/13/2014	10/22/2014	Initial	Initial Permit Issuance
27843-14-F(R1)	07/18/2017	08/18/2017	Admin	Updated to Newest Format; corrected Insignificant Activities list and added Insignificant Activity Emission Unit (Emission Unit IA)
			Sig	incorporation of Construction Permit C-1293-1002-17-F (entire Emission Unit U1); Removed GHG emission limits from General Condition 10, as it no longer applies
O-1293-19-F	09/25/2019	10/28/2019	Renewal	Updated permit format, updated emission point designations, added 5.6 MMBtu/hr direct fired water heater (Non-Regulated), and batch admixture storage totes (Insignificant activities) Added controlled and uncontrolled emission factors to clarify how to calculate emissions

7. Construction Permit History:

Permit No.	Effective Date	Description
C-1293-1002-17-F	5/9/2017	New ready mix batch plant to replace existing ready mix batch plant.

8. Application Related Documents

Document Number	Date	Description
83180	3/30/2017	Certificate of Authority
98514; 98537	05/29/2019	Email about FEDOOP renewal application
98611	06/13/2019	Ernst Concrete Kentucky, LLC Site Visit
OB3074	07/25/2019	Email about FEDOOP renewal application
OB91559	07/29/2019	Operating FEDDOP renewal Application (received)
OB91560	8/20/2019	Request for updated FEDOOP application to correct control device for E16
OB118908	9/23/2019	Draft permit sent to company and second request for updated application
OB118929	9/24/2019	Updated FEDOOP Renewal Application received

9. Emission Summary:

Pollutant	District Calculated Actual Emissions (ton/yr) 2013 Data	Pollutant that triggered Major Source Status (based on PTE)
CO	0	No
NO_x	0	No
SO₂	0	No
PM₁₀	0.52	Yes
VOC	0.052	No
Total HAPs	0.02	No
Single HAP	0.01	No

10. Applicable Requirements:

- | | | |
|------------------------------------|---|------------------------------------|
| <input type="checkbox"/> 40 CFR 60 | <input checked="" type="checkbox"/> SIP | <input type="checkbox"/> 40 CFR 63 |
| <input type="checkbox"/> 40 CFR 61 | <input checked="" type="checkbox"/> District Origin | <input type="checkbox"/> Other |

11. Referenced Federal Regulations:

The source has no federal requirements.

12. Non-Applicable Regulations:

None

II Regulatory Analysis**1. Stratospheric Ozone Protection Requirements:**

Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. Ernst Concrete Kentucky, LLC does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.

2. Prevention of Accidental Releases 112(r):

Ernst Concrete Kentucky, LLC – Downtown does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, *Chemical Accident*

Prevention Provisions, in a quantity in excess of the corresponding specified threshold amount.

3. Basis of Regulation Applicability

a. Applicable Regulations

Regulation	Title	Basis
1.14	Control of Fugitive Particulate Emissions	Regulation 1.14 establishes requirements for control of fugitive particulate emissions
2.17	Federally Enforceable District Origin Operating Permits	FEDOOP source
5.00	Standards for Toxic Air Contaminants and Hazardous air Pollutants, Definitions	Establishes definitions of terms used in the Strategic Toxic Air Reduction Program.
5.01	General Provisions	Establishes general provisions for process equipment from which a toxic air contaminant is or may be emitted.
5.20	Methodology for Determining Benchmark Ambient Concentration of a Toxic Air Contaminant	Establishes the methodology for determining the benchmark ambient concentration of a toxic air contaminant.
5.21	Environmental Acceptability for Toxic Air Contaminants	Establishes the criteria for determining the environmental acceptability of emissions of toxic air contaminants.
5.22	Procedures for Determining the Maximum Ambient Concentration of a Toxic Air Contaminant	Establishes the procedures for determining the maximum ambient concentration of a toxic air contaminant.
5.23	Categories of Toxic Air Contaminants	Establishes categories of toxic air contaminants.
7.08	Standards of Performance for New Process Operations	Regulation 7.08 establishes the requirements for PM emissions from new processes that commence construction after September 1, 1976
7.12	Standard of Performance for New Storage Vessels for Volatile Organic Compounds	Regulation 7.12 establishes the requirements for VOC storage tanks.

b. Plantwide

Ernst Concrete Kentucky, LLC – Downtown is a potential major source for the pollutant PM₁₀. Regulation 2.17 – *Federally Enforceable District Origin Operating Permits* establishes requirements to limit the plantwide potential emission rates to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements. The source requested plantwide emission limits of the criteria pollutant PM₁₀ less than 25 tons per year, to be classified as a synthetic minor (FEDOOP) source.

Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 (STAR Program) establishes requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards. Ernst Concrete Kentucky, LLC – Downtown has requested the total plantwide emission limits of 25 tpy for regulated air pollutants to be a FEDOOP STAR Exempt source

Regulation 2.17, section 5.2, requires monitoring and record keeping to assure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the district upon request.

Regulation 2.17, section 7.2, requires stationary sources for which a FEDOOP is issued to submit an Annual Compliance Certification by April 15, of the following calendar year. In addition, as required by Regulation 2.17, section 5.2, the source shall submit regular reports to show compliance with the permit. Compliance reports and compliance certifications shall be signed by a responsible official and shall include a certification statement per Regulation 2.1. The compliance reports are due within 60 days of the end of the reporting period:

<u>Reporting Period</u>	<u>Report Due Date</u>
January 1 - June 30	August 29
July 1 - December 31	March 1 of the following year

c. Emission Unit U1 – Concrete Dry Mix Batch Plant

i. Equipment:

Emission Point	Description	Applicable Regulations
E1b	Aggregate delivery to ground storage [stockpile] via Dump Truck (Capacity: 112 ton/hr)	1.14, 7.08
E2b	Sand delivery to ground [stockpile] via Dump Truck (Capacity: 86 ton/hr)	
E3b	Aggregate handling [front loader: pile to conveyor fill hopper] Loader (Caterpillar 950B) (Capacity: 112 ton/hr)	7.08
E3.1b	Aggregate transfer to conveyor from fill hopper, Con-E-Co (Capacity: 112 ton/hr)	
E4b	Loader, Caterpillar 950B: Sand transfer to conveyor fill hopper (Capacity: 86 ton/hr)	
E4.1b	Sand transfer to conveyor from fill hopper, Con-E-Co (Capacity: 86 ton/hr)	
E5b	Conveyor, Con-E-Co, Lo-Pro IZ RS: Aggregate transfer to elevated storage via conveyor (Capacity: 112 ton/hr)	7.08
E6b	Conveyor, Con-E-Co, Lo-Pro IZ RS: Sand transfer to elevated storage via conveyor (Capacity: 86 ton/hr)	
E7b	Elevated Storage Silo I, Belgrade Steel Tank 1065BB L: Cement Unloading (Capacity: 50 ton/hr)	
E8b	Elevated Storage Silo II & III (Belgrade Steel Tank 1022 BB L): Cement Unloading (Capacity: 50 ton/hr)	
E9b	Elevated Storage Silo IV & V, Belgrade Steel Tank 850 BBL: Cement & Fly Ash Unloading, (Capacity: 50 ton/hr)	7.08
E10b	Weigh hopper, Con-E-Co, Lo-Pro IZ RS: loading of sand and aggregate from storage bins (batcher) (Capacity: 198 ton/hr)	
E10.1b	Aggregate/sand transfer conveyor (Weigh hopper conveyer to truck load out)	
E11b	Transit Mix Truck loading of cement and fly ash, Con-E-Co, Lo-Pro IZ RS, (Capacity 34 ton/hr)	
E16	Cement/Fly Ash weigh hopper (batcher), Con-E-Co, PJC-80, (Capacity 34 ton/hr)	
E12	Paved/Unpaved Roads	1.14
E15	Slop/Sediment Stockpile	1.14, 7.08

ii. Standards/Operating Limits

(1) Opacity

- (a) Regulation 1.14, section 2.3 establishes standards for opacity.
- (b) Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%, for processes that commenced construction after September 1, 1976.

(2) PM/PM₁₀

- (a) Regulation 1.14, section 2.1 establishes work practice standards to prevent particulate matter from becoming airborne beyond the work site.
- (b) The emission standard for PM at each emission point (E15) with a process throughput of less than 0.50 ton/hr is 2.34 lb/hr in accordance with Regulation 7.08, section 3.1.2.s
- (c) The emission standard for PM at each emission point with a process throughput of greater than 30 ton/hr is determined in accordance with Regulation 7.08, section 3.1.2 as follows:

$$\text{PM lb/hr limit} = 17.31 (\text{process weight ton/hr})^{0.16}$$

III Other Requirements**1. Temporary Sources:**

The source did not request to operate any temporary facilities.

2. Short Term Activities:

The source did not report any short term activities.

3. Emissions Trading:

N/A

4. Alternative Operating Scenarios:

The source did not request any alternative operating scenarios.

5. Compliance History:

Incid. #	Date	Regulation Violated	Settlement
06625	03/01/2013	Reg. 2.03, section 5.2, did not submit compliance report	Administrative Settlement
06562	9/12/2014	Reg. 1.14, section 2.1, did not control fugitive dust	Agreed Board Order

6. Calculation Methodology or Other Approved Method:

The owner or operator shall calculate emissions using emission factors and equations in this attachment unless other methods are approved in writing by the District.

Emission Unit U1: Concrete Dry Mix Batch Plant

The tables supplied throughout the calculation methodology, list AP-42 emission factors, and those factors converted to lb pollutant/yd³ concrete. This is an example calculation as follows for E7 whose emission factors are based on ton cement, converting the AP-42 emission factor to PM10/yd³ concrete.

$$\begin{aligned} (\text{EF lb PM10/ton cement}) * (\text{ton cement/yd}^3 \text{ concrete}) &= (\text{lb PM10/yd}^3 \text{ concrete}) \\ (0.47 \text{ lb PM10/ton cement}) * (0.2455 \text{ ton cement/yd}^3 \text{ concrete}) &= (0.1154 \text{ lb PM10/yd}^3 \text{ concrete}) \end{aligned}$$

Emission Factor conversion to ton composite/yd³ concrete

Concrete composition ¹ :	lbs composite/ yd ³ concrete	ton composite/ yd ³ concrete
Density	4024	2.012
Aggregate	1865	0.933
Sand	1428	0.714
Cement + Sup.	564	0.282
Water	167	0.083
Total	4024	2.012
lb cement	491	0.2455
cement Supplement (fly ash)	73	lbs/yard

¹ AP-42 11.12-2 footnote a: The average material composition of concrete batches presented was 1865 lbs course aggregate, 1428 lbs sand, 491 lbs cement and 73 lbs cement supplement. Approximately 20 gallons of water was added to this solid material to produce 4024 lbs (one cubic yard) of concrete.

Emission Factors for Cement silo filling U1 [E7b, E8b, E9b (cement only)]

	Uncontrolled			Controlled²		
Criteria Pollutant	AP-42 Emission Factor (lb/ton cement)	AP-42 EF converted (lb/yd³ concrete)³	EF Source	AP-42 Emission Factor (lb/ton cement)	AP-42 EF converted (lb/yd³ concrete)³	EF Source
PM	0.73	0.1792	AP-42, 11.12-2	0.00099	0.0002	AP-42, 11.12-2
PM10	0.47	0.1154	AP-42, 11.12-2	0.00034	8.35E-05	AP-42, 11.12-2
PM2.5 ⁴	0.47	0.1154	See footnote 4	0.00034	8.35E-05	See footnote 4
Arsenic	1.68E-06	4.12E-07	AP-42, 11.12-8	4.24E-09	1.04E-09	AP-42, 11.12-8
Beryllium	1.79E-08	4.39E-09	AP-42, 11.12-8	4.86E-10	1.19E-10	AP-42, 11.12-8
Cadmium	2.34E-07	5.74E-08	AP-42, 11.12-8	4.68E-09	5.74E-08	AP-42, 11.12-8
Total Chromium	2.52E-07	6.19E-08	AP-42, 11.12-8	2.90E-08	7.12E-09	AP-42, 11.12-8
Lead	7.36E-07	1.81E-07	AP-42, 11.12-8	1.09E-07	2.68E-08	AP-42, 11.12-8
Manganese	2.02E-04	4.96E-05	AP-42, 11.12-8	1.17E-07	2.87E-08	AP-42, 11.12-8
Nickel	1.76E-05	4.32E-06	AP-42, 11.12-8	4.18E-08	1.03E-08	AP-42, 11.12-8
Total Phosphorus	1.18E-05	2.90E-06	AP-42, 11.12-8	2.36E-07	2.90E-06	AP-42, 11.12-8

Emission Factors for Fly ash silo filling U1 [E9b (fly ash only)]

	Uncontrolled⁵			Controlled		
Criteria Pollutant	AP-42 Emission Factor (lb/ton fly ash)	AP-42 EF converted (lb/yd³ concrete)	EF Source	AP-42 Emission Factor (lb/ton fly ash)	AP-42 EF converted (lb/yd³ concrete)	EF Source
PM	3.14	0.1146	AP-42, 11.12-2	0.0089	0.0003	AP-42, 11.12-2
PM10	1.1	0.0402	AP-42, 11.12-2	0.0049	1.79E-04	AP-42, 11.12-2
PM2.5 ⁶	1.1	0.0402	See footnote 6	0.0049	1.79E-04	See footnote 6

² The controlled emission factors for Cadmium and total Phosphorus were calculated using the District default baghouse efficiency of 98%; controlled EF = (uncontrolled EF) * (1-0.98)

³ AP-42 Emission Factors are converted to (lb pollutant/yd³ concrete) for ease in calculation.

⁴ In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

⁵ The ND uncontrolled emission factors for fly ash silo filling (E9) were calculated using the District default baghouse efficiency of 98%; uncontrolled EF = (controlled EF) / (1-0.98)

⁶ In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

	Uncontrolled ⁵			Controlled		
Criteria Pollutant	AP-42 Emission Factor (lb/ton fly ash)	AP-42 EF converted (lb/yd ³ concrete)	EF Source	AP-42 Emission Factor (lb/ton fly ash)	AP-42 EF converted (lb/yd ³ concrete)	EF Source
Arsenic	5.00E-05	1.83E-06	AP-42, 11.12-8	1.00E-06	3.65E-08	AP-42, 11.12-8
Beryllium	4.52E-06	1.65E-07	AP-42, 11.12-8	9.04E-08	3.30E-09	AP-42, 11.12-8
Cadmium	9.90E-09	3.61E-10	AP-42, 11.12-8	1.98E-10	7.23E-12	AP-42, 11.12-8
Total Chromium	6.10E-05	2.23E-06	AP-42, 11.12-8	1.22E-06	4.45E-08	AP-42, 11.12-8
Lead	2.60E-05	9.49E-07	AP-42, 11.12-8	5.20E-07	1.90E-08	AP-42, 11.12-8
Manganese	1.28E-05	4.67E-07	AP-42, 11.12-8	2.56E-07	9.34E-09	AP-42, 11.12-8
Nickel	1.14E-04	4.16E-06	AP-42, 11.12-8	2.28E-06	8.32E-08	AP-42, 11.12-8
Total Phosphorus	1.77E-04	6.46E-06	AP-42, 11.12-8	3.54E-06	1.29E-07	AP-42, 11.12-8
Selenium	3.62E-06	1.32E-07	AP-42, 11.12-8	7.24E-08	2.64E-09	AP-42, 11.12-8

E7b lb pollutant = (ton cement) * E7b EF (lb pollutant/ton cement)

E7b lb pollutant = (concrete yds³) * E7b EF (lb pollutant/concrete yds³)

E9b lb pollutant = (ton fly ash) * E9b EF (lb pollutant/ton fly ash)

E9b lb pollutant = (concrete yds³) * E9b EF (lb pollutant/concrete yds³)

Emission Factors for U1 [E1b, E2b, E3b, E4b, E5b, E6b, E10b, E11b]

	PM Uncontrolled		PM10 Uncontrolled		
Criteria Pollutant	AP-42 Emission Factor (lb PM/ton material)	AP-42 EF converted (lb PM/yd ³ concrete)	AP-42 Emission Factor (lb PM10/ton material) ¹	AP-42 EF converted (lb PM10/yd ³ concrete)	EF Source
Weigh hopper (E10, E10.1)	0.0048	0.0079	0.00280	0.0046	AP-42, 11.12-2
Aggregate transfer (E1 ⁷ , E3, E3.1, E5, E15 ⁷)	0.0069	0.0064	0.00330	0.0031	AP-42, 11.12-2
Sand transfer (E2 ⁸ , E4, E4.1, E6)	0.0021	0.0015	0.00099	0.0007	AP-42, 11.12-2

PM and PM₁₀ per ton material defined as follows per AP-42:

Weigh hopper material = (sand + aggregate) in tons

⁷ E1b, E15: Aggregate stockpiles/handling [delivery to ground storage pile] This emission factor is for aggregate handling and does not represent stockpile erosion.

⁸ E2b: Sand stockpiles/handling [delivery to ground storage pile] This emission factor is for aggregate handling and does not represent stockpile erosion

Aggregate transfer = aggregate in tons

Sand transfer = sand in tons

Example calculation for U1:

E10b lb pollutant = (ton material) * EF (lb PM/ton material)

E10b lb pollutant/yr = (concrete yds³/yr) * EF (lb pollutant/concrete yds³)

E1b Aggregate (SCC 3-05-011-21) Delivery to ground storage (stockpile)

E2b Sand (SCC 3-05-011-22) Delivery to ground storage (stockpile)

[E3b, E3.1b, E4b, E4.1b] Aggregate (SCC 3-05-011-23) and Sand (SCC 3-05-011-24) from ground storage to fill hopper to loading conveyor

E3b lb pollutant/yr = [(ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

E4b lb pollutant/yr = [(ton sand/yr) * EF (lb pollutant/ton sand)]

E3b lb pollutant/yr = [(concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)]

E4b lb pollutant/yr = [(concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³)]

E3.1b Aggregate (SCC 3-05-011-23) Transfer to conveyor via fill hopper

E4.1b Sand (SCC 3-05-011-24) Transfer to conveyor via fill hopper

E3.1b lb pollutant/yr = [(ton sand/yr) * EF (lb pollutant/ton sand) + (ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

E3.1b lb pollutant/yr = (concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³) + (concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)

E5b Aggregate (SCC 3-05-011-04) Transfer to elevated storage

E6b Sand (SCC 3-05-011-05) Transfer to elevated storage

E5b lb pollutant/yr = [(ton aggregate/yr) * EF Aggregate Transfer (lb pollutant/ton aggregate)]

E5b lb pollutant/yr = [(concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)]

E6b lb pollutant/yr = [(ton sand/yr) * EF Sand Transfer (lb pollutant/ton sand)]

E6b lb pollutant/yr = [(concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³)]

E10b A/S transfer to weigh hopper

E10b lb pollutant/yr = [(ton sand/yr) * EF (lb pollutant/ton sand) + (ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

E10b lb pollutant/yr = (concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³) + (concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)

E10.1b Aggregate/sand transfer conveyor (Weigh hopper conveyor to truck load out)

E10.1b lb pollutant/yr = [(ton sand/yr) * EF (lb pollutant/ton sand) + (ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

E10.1b lb pollutant/yr = (concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³) + (concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)

U1 [E16]: Cement/Fly ash weigh hopper [batcher]⁹

Criteria Pollutant	Uncontrolled		Controlled		EF Source
	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	
PM	1.118	0.3153	0.098	0.0276	AP-42, 11.12-2
PM10	0.31	0.0874	0.0263	0.0074	AP-42, 11.12-2
PM2.5 ¹⁰	0.31	0.0874	0.0263	0.0074	See footnote 10
Arsenic	1.22E-05	3.44E-06	6.02E-07	1.70E-07	AP-42, 11.12-8
Beryllium	2.44E-07	6.88E-08	1.04E-07	2.93E-08	AP-42, 11.12-8
Cadmium	3.42E-08	9.64E-09	9.06E-09	2.55E-09	AP-42, 11.12-8
Total Chromium	1.14E-05	3.21E-06	4.10E-06	1.16E-06	AP-42, 11.12-8
Lead	3.62E-06	1.02E-06	1.53E-06	4.31E-07	AP-42, 11.12-8
Manganese	6.12E-05	1.73E-05	2.08E-05	5.87E-06	AP-42, 11.12-8
Nickel	1.19E-05	3.36E-06	4.78E-06	1.35E-06	AP-42, 11.12-8
Total Phosphorus	3.84E-05	1.08E-05	1.23E-05	3.47E-06	AP-42, 11.12-8
Selenium	2.62E-06	7.39E-07	1.13E-07	3.19E-08	AP-42, 11.12-8

E16 lb pollutant/yr = (ton cement + supplement)/yr * EF (lb pollutant/ton cement + supplement)

E16 lb pollutant/yr = (concrete yds³/yr) * EF (lb pollutant/concrete yds³)

U1 [E11b]: Truck loading (truck mix) (SCC 3-05-011-10)

Criteria Pollutant	Uncontrolled		Controlled		EF Source
	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	
PM	1.118	0.3153	0.098	0.0276	AP-42, 11.12-2
PM10	0.31	0.0874	0.0263	0.0074	AP-42, 11.12-2
PM2.5 ¹¹	0.31	0.0874	0.0263	0.0074	See footnote 11
Arsenic	1.22E-05	3.44E-06	6.02E-07	1.70E-07	AP-42, 11.12-8
Beryllium	2.44E-07	6.88E-08	1.04E-07	2.93E-08	AP-42, 11.12-8
Cadmium	3.42E-08	9.64E-09	9.06E-09	2.55E-09	AP-42, 11.12-8

⁹ Without specified emission factors for cement/fly ash weigh hopper [batcher], the truck loadout (truck mix) emission factors are applied.

¹⁰ In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

¹¹ In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

	Uncontrolled		Controlled		
Criteria Pollutant	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	EF Source
Total Chromium	1.14E-05	3.21E-06	4.10E-06	1.16E-06	AP-42, 11.12-8
Lead	3.62E-06	1.02E-06	1.53E-06	4.31E-07	AP-42, 11.12-8
Manganese	6.12E-05	1.73E-05	2.08E-05	5.87E-06	AP-42, 11.12-8
Nickel	1.19E-05	3.36E-06	4.78E-06	1.35E-06	AP-42, 11.12-8
Total Phosphorus	3.84E-05	1.08E-05	1.23E-05	3.47E-06	AP-42, 11.12-8
Selenium	2.62E-06	7.39E-07	1.13E-07	3.19E-08	AP-42, 11.12-8

$E11b \text{ lb pollutant/yr} = (\text{ton cement} + \text{supplement})/\text{yr} * EF \text{ (lb pollutant/ton cement} + \text{supplement)}$

$E11b \text{ lb pollutant/yr} = (\text{concrete yds}^3/\text{yr}) * EF \text{ (lb pollutant/concrete yds}^3\text{)}$

IA1 [E17, E18, E20] Emission Factors for Storage Tanks

Emission Source	Pollutant	Emission Factor (lb/gallon)	Emission Factor Source
E17 Diesel Storage tank 2000 gallons	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.
E18 Diesel Storage tank 500 gallons	VOC	N/A	
E20-C Chemical Admixtures totes EUCON WR-91	VOC	N/A	
E20-F Chemical Admixtures totes PLASTOL 6425	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.
E20-G Chemical Admixtures totes ACCELGARD 90	VOC	N/A	

Non-Regulated**[E19] NG Direct Water Heater Emission Factors**

Emission Source	Pollutant	Natural Gas Emission Factor (lb/10 ⁶ scf natural gas combusted)		Emission Factor Source
		Uncontrolled	Controlled	
E19	NOX	100	100	AP-42, 1.4-1
	CO	84	84	AP-42, 1.4-1
	PM	0.52	0.52	2011 NEI (Roy Huntley, EPA) ¹²
	PM10	.0.32	0.32	Roy Huntley, EPA ¹²
	SO2	0.6	0.6	AP-42, 1.4-2
	VOC	5.5	5.5	AP-42, 1.4-2
	NH3	3.2	3.2	EPA Web FIRE

$$E = (X) * (EF \text{ lb}/10^6 \text{ scf}) * (1 \text{ ton}/2000 \text{ lb.})$$

Where: E = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf) natural gas combusted]

[E19]: NG Direct Water Heater Emission Factors

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor (lb/10 ⁶ scf natural gas combusted)		Emission Factor Source
			Uncontrolled	Controlled	
E19	2-Methylnaphthalene	91-57-6	2.40E-05	2.40E-05	AP-42, 1.4-3
	3-Methylchloranthrene	56-49-5	1.80E-06	1.80E-06	AP-42, 1.4-3
	DMBA	57-97-6	1.60E-05	1.60E-05	AP-42, 1.4-3
	Acenaphthene	83-32-9	1.80E-06	1.80E-06	AP-42, 1.4-3
	Acenaphthylene	208-96-8	1.80E-06	1.80E-06	AP-42, 1.4-3
	Anthracene	120-12-7	2.40E-06	2.40E-06	AP-42, 1.4-3
	Benz(a)anthracene	56-55-3	1.80E-06	1.80E-06	AP-42, 1.4-3
	Benzene	71-43-2	2.10E-03	2.10E-03	AP-42, 1.4-3
	Benzo(a)pyrene	50-32-8	1.20E-06	1.20E-06	AP-42, 1.4-3
	Benzo(b)fluoranthene	205-99-2	1.80E-06	1.80E-06	AP-42, 1.4-3

¹² The revised PM emission factors are from: "EPA's Emission Inventory and Analysis Group guidance 3/30/2012".

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor (lb/10 ⁶ scf natural gas combusted)		Emission Factor Source
			Uncontrolled	Controlled	
	Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.20E-06	AP-42, 1.4-3
	Benzo(k)fluoranthene	205-82-3	1.80E-06	1.80E-06	AP-42, 1.4-3
	Chrysene	218-01-9	1.80E-06	1.80E-06	AP-42, 1.4-3
	Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.20E-06	AP-42, 1.4-3
	Dichlorobenzene	25321-22-6	1.20E-03	1.20E-03	AP-42, 1.4-3
	Fluoranthene	206-44-0	3.00E-06	3.00E-06	AP-42, 1.4-3
	Fluorene	86-73-7	2.80E-06	2.80E-06	AP-42, 1.4-3
	Formaldehyde	50-00-0	7.50E-02	7.50E-02	AP-42, 1.4-3
	Hexane	110-54-3	1.80E+00	1.80E+00	AP-42, 1.4-3
	Indeno(1,2,3-cd) pyrene	193-39-5	1.80E-06	1.80E-06	AP-42, 1.4-3
	Naphthalene	91-20-3	6.10E-04	6.10E-04	AP-42, 1.4-3
	Phenanthrene	85-01-8	1.70E-05	1.70E-05	AP-42, 1.4-3
	Pyrene	129-00-0	5.00E-06	5.00E-06	AP-42, 1.4-3
	Toluene	108-88-3	3.40E-03	3.40E-03	AP-42, 1.4-3
	Arsenic	7440-38-2	2.00E-04	2.00E-04	AP-42, 1.4-4
	Beryllium	7440-41-7	1.20E-05	1.20E-05	AP-42, 1.4-4
	Cadmium	7440-43-9	1.10E-03	1.10E-03	AP-42, 1.4-4
	Chromium	7440-47-3	1.40E-03	1.40E-03	AP-42, 1.4-4
	Cobalt	7440-48-4	8.40E-05	8.40E-05	AP-42, 1.4-4
	Manganese	7439-96-5	3.80E-04	3.80E-04	AP-42, 1.4-4
	Mercury	7439-97-6	2.60E-04	2.60E-04	AP-42, 1.4-4
	Nickel	7440-02-0	2.10E-03	2.10E-03	AP-42, 1.4-4
	Selenium	7782-49-2	2.40E-05	2.40E-05	AP-42, 1.4-4

7. Insignificant Activities

Equipment	Qty	PTE (tpy)	Basis for Exemption
Mobile Internal Combustion Engine	1	2.5 NO _x	Regulation 1.02, Appendix A
E21 Brazing, soldering, or welding equipment	1	0.41 PM	Regulation 1.02, Appendix A
E17: 2,000 gallon diesel fuel above ground tank (Emission Unit IA1)	1	0.000175 VOC	Regulation 1.02, Appendix A
E18: 500 gallon diesel fuel above ground tank (Emission Unit IA1)	1	0.000045 VOC	Regulation 1.02, Appendix A
E20-C Chemical Admixtures totes EUCON WR-91 (1500 gallons) (Emission Unit IA2)	1	0.803 VOC	Regulation 1.02
E20-D Chemical Admixtures totes EUCON MR (1500 gallons)	1	0.0237 HAP	Regulation 1.02
E20-E Chemical Admixtures totes EUCON A+ (1500 gallons)	1	0.0016 HAP	Regulation 1.02
E20-F Chemical Admixtures totes PLASTOL 6425 (1500 gallons) (Emission Unit IA2)	2	0.5264 VOC total	Regulation 1.02
E20-G Chemical Admixtures totes ACCELGARD 90 (1500 gallons) (Emission Unit IA2)	2	1.62 VOC total	Regulation 1.02

- Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements.
- Insignificant activities identified in District Regulation 1.02, Appendix A, shall comply with generally applicable requirements.
- The owner or operator shall annually submit an updated list of insignificant activities that occurred during the preceding year, with the compliance certification due April 15th.
- Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
- The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions or use Potential to Emit (PTE) as the annual emissions for each piece of equipment.
- The District has determined that no monitoring, record keeping, or reporting requirements apply to the insignificant activities listed, except

for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.

Equipment Non-Regulated

Emission Point	Description
E19	Concrete Machinery Corporation, Model DC 5600, natural gas, direct contact water heater, 5.6 MMBtu/hr
E20-A	One (1) Chemical Admixtures tote AIRMARC 6 (1000 gallons)
E20-B	One (1) Chemical Admixtures tote RETARDER 100 (1000 gallons)
E20-H	Two (2) Chemical admixture totes CALCIUM CHLORIDE (3000 gallons)

8. Basis of Regulation Applicability for IA units

a. Emission Unit IA1– Storage Tanks

i. Equipment:

Emission Point	Description	Applicable Regulations
E17	One (1) 2,000 gallon diesel storage tank	7.12
E18	One (1) 500 gallon diesel storage tank	
E20-C	Chemical admixture tote EUCON WR-91 (1500 gallons)	
E20-E	Chemical admixture tote EUCON A+ (1500 gallons)	
E20-G	Chemical admixture tote ACCELGARD 90 (1500 gallons)	

ii. Standards/Operating Limits

(1) VOC

- (a) Regulation 7.12, section 3.3 establishes equipment standards for VOC storage vessels